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Corporate Governance, Legal Environment, and Auditor Choice in Emerging Markets

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In this study, we examine the effect of firm-level governance on the firm's choice of an external auditor. Further, we test how the relation between corporate governance and auditor choice may be affected by the strength of legal environment. The results show that firm-level governance scores are positively related to the firm's auditor choice. This association is strengthened by country-level legal protection. Specifically, the positive association between auditor choice and the firm-level governance scores is weaker (stronger) in a low (high) legal environment. These findings are robust after controlling for determinants that were found to be significant in earlier research. Overall, our results suggest that the benefits arising from the employment of high-quality auditors are likely to be greater when legal environment is stronger because both auditors and firms are subject to more severe legal punishments for opportunistic behavior.

Keywords: Auditor choice; corporate governance; emerging markets; legal environment; investor protection.

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1. Introduction

In this study, we examine the association between firm-level corporate governance and firm's choice of external auditor across emerging and newly emerged markets with varying strengths in the legal environment. Fan and Wong (2005) show that firms are more likely to hire high quality auditors when the agency problems embedded in the ownership structure is more severe. The study further shows that the relation is evident among firms that are frequent equity issuers but not among less frequent equity issuers. Choi and Wong (2007) focus on the choice of auditor in specific situations where the need for strong governance is crucial, and results show a positive relation between financing needs and Big 5 auditor choice. The study further shows that this relation weakens as the strength of the legal environment increases, thus indicating that external auditors play a more important governance function in countries where legal institutions are weak than in countries where legal institutions are strong. While prior studies examine the role of quality auditor in specific situations where the need for strong governance is crucial, it is not immediately clear that the results apply to the general situation where the need for strong governance is not so obvious. Mitton (2002) reports a positive and significant association between firm returns and high quality auditing in East Asian economies during a period of financial crisis when good corporate governance is critical, but reports no such association in the pre-crisis period. Our paper contributes to the broader research question of how firm-level governance and legal environment may interplay and impact a firm's auditor choice in the general situation where there is no obvious need for strong corporate governance.

Klein (2002) and Beasley and Salterio (2001) provide empirical support for the argument that boards with stronger governance attributes are more likely to value the services of high-quality audit committee because such boards have greater incentives to improve financial reporting quality. This study extends the argument to the choice of external auditor in strong governance environment, and we posit that firms with better corporate governance are more likely to engage high-quality auditor. La Porta *et al.* (2000) view corporate governance as a set of mechanisms through which outside investors protect themselves against expropriation by the insiders. La Porta *et al.* (1998) state that accounting plays a potentially crucial role in corporate governance since basic accounting standards are needed to render accounting disclosures interpretable. Auditing provides independent assurance that accounting standards have been applied, thus auditing plays an

important role in the production of credible accounting. We first examine whether firms with good governance practices are likely to engage high-quality auditor to assure outside minority shareholders of the reliability of accounting information and hence mitigate the agency problem.

We then investigate how the relation between corporate governance and auditor choice may be affected by the legal environment. One important dimension in cross country studies that has received considerable attention is the investor protection laws and the quality of law enforcement. While high-quality auditor is likely to improve the overall corporate governance, it is not obvious whether the quality of auditor matters more or less in a weak investor protection environment. On the one hand, in countries with weak investor protection, firms may be powerless to independently improve their governance through the hiring of high-quality auditors, given the weak enforcement mechanisms in place. Under such circumstances, an external auditor is unlikely to act as a monitor of controlling owner when litigation risk is sufficiently low and the benefits of aligning with ultimate owner exceed the potential penalties. The benefits arising from the employment of high-quality auditors may be more significant in the high investor protection environment where both auditors and firms are subject to severe legal punishments for opportunistic behavior (Newman *et al.*, 2005).

On the other hand, it is equally plausible that the employment of high-quality auditors may matter more in improving overall governance in countries with weak investor protection. The choice of auditors may signal to the investors about the firm's high standard of corporate governance. Any improvement in governance is likely to have a more significant impact and be welcomed by investors. Furthermore, when investor protection is high, strong outsider rights limit insiders' acquisition of private control benefits, thus enhancing the value of accounting information but reducing the marginal benefit of having high-quality auditors. Hence, the incremental improvement in the overall firms' corporate governance as a result of employing high-quality auditors is likely to be greater for firms in weak (vs. strong) legal environment due to the potentially higher agency costs. This view is supported by a number of recent studies which show that firm-level governance substitutes are used in weak legal environment (Klapper and Love, 2004; Durnev and Kim, 2005; Lang *et al.*, 2004).

We measure the quality of corporate governance using the governance rating provided by Credit Lyonnais Securities Asia (CLSA, 2001). This rating has been used extensively in prior studies (e.g., Chen *et al.*, 2009;

Durnev and Kim, 2004; Klapper and Love, 2004).[1] Following prior studies (e.g., Becker *et al.*, 1998), we use Big 5/non-Big 5 membership to proxy for auditor quality.[2]

Using a sample of 282 companies listed on 16 emerging markets, we find that firm-level governance scores are significantly and positively related to the firm's auditor choice. The evidence is consistent with the contention that firms select external auditors as part of their overall corporate governance/investor relations strategy. The role of an external auditor in mitigating agency conflict is consistent with previous research that documents a strong link between quality of auditor and corporate governance in emerging markets (Fan and Wong, 2005; Choi and Wong, 2007).

Additionally, we find that the positive association between auditor choice and governance scores increases with the strength of the legal environment. Our results suggest that the extent of improvement on firm's governance by employing high-quality auditors is likely to be constrained by country-level legal provisions. The benefits arising from the employment of high-quality auditors is greater when investor protection is higher because both auditors and firms are subject to more severe legal punishments for opportunistic behavior (Newman *et al.*, 2005). Investors in countries with strong investor protection will price protect their investments if they believe the accounting information is manipulated. This provides firms with incentive to engage high quality auditors to play the bonding and signaling roles. In contrast, in countries where investor protection is weaker, incentives to engage high quality auditor may be lacking since outsiders cannot easily sue and claim damages from both insiders and auditors, and opaqueness could even benefit ultimate owners by allowing them to protect their private control benefits and to seek political rents (Ball *et al.*, 2003; Bhattacharya *et al.*, 2003; Fan and Wong, 2005).

Our study contributes to a growing research that highlights the importance of firm-level corporate governance in emerging markets. La Porta *et al.* (1997, 1998, 2000) demonstrate that across countries, corporate governance is an important factor in financial market development and firm value. Claessens *et al.* (2000) investigate the ownership structure of firms in nine East Asian countries, including the emerging markets studied in this

[1]Further details of the CLSA governance rating are provided in Section 3.1.

[2]The data in the study is based on 2001 which predates the collapse of Arthur Andersen in 2002. We use the term Big 5 throughout the paper to refer to the set of large international accounting firms.

paper. They conclude that expropriation of minority shareholders by inside controlling owners is a major corporate governance problem in East Asia. Previous studies show that firms can enhance value by improving firm-level governance mechanisms in emerging markets by lowering contracting imperfections and information asymmetry (Durnev and Kim, 2005; Klapper and Love, 2004). Chan *et al.* (2007) provide evidence in the Chinese market that the demand for high-quality auditors increases when agency problems (proxied by the proportion of shares owned by the government) decrease. We contribute to this line of literature by investigating whether firm-level governance practices are related to auditor choice in emerging markets with varying level of investor protection.

Our study extends previous cross-country studies that examine auditor choice. Francis *et al.* (2003) find that Big 5 auditors have a larger market share in countries with strong investor protection. Implicit in their study is that the quality of governance is subsumed under the quality of legal systems (La Porta *et al.*, 2000). However, as documented in previous studies (Durnev and Kim, 2005; Klapper and Love, 2004), there is wide variation in the quality of corporate governance within the same country. Hence, it is not clear whether firms with high governance quality but in weak investor protection environments have incentives to employ Big 5 auditors. We corroborate Francis *et al.*'s (2003) finding by showing that firms are likely to employ Big 5 auditors the higher the quality of corporate governance, across countries with varying degree of investor protection.

Our study also complements Choi and Wong (2007) who find that firms with external capital needs and firms suffering from losses are more likely to employ Big 5 auditors, especially when the legal environment is weak. While our study investigates the general situation and examines the association between firm's quality of corporate governance and auditor choice, Choi and Wong (2007) focus on the choice of auditor in two specific situations where the need for strong governance is crucial. The study shows that the positive relation between financing needs and Big 5 auditor choice decreases as the strength of the legal environment increases. Similarly, the positive relation between firm risk and Big 5 auditor choice decreases as the strength of the legal environment increases. In contrast, we investigate the general situation and find that the positive relation between governance and Big 5 auditor choice increases as the strength of the legal environment increases. The different results may be compared to the findings of Mitton (2002) and Fan and Wong (2005). Mitton (2002) reports a positive and significant association between firm returns and high quality auditing in East Asian

economies during a period of financial crisis when good corporate governance is critical, but reports no such association in the pre-crisis period. Fan and Wong (2005) show that firms are more likely to hire high quality auditors when the agency problems embedded in the ownership structure is more severe, but the relation is evident among firms that are frequent equity issuers but not among less frequent equity issuers.

This paper proceeds as follows. Section 2 discusses the background literature and hypotheses. Section 3 describes the sample and research methods. Section 4 discusses the results of the study and Section 5 provides conclusions and implications of our results.

2. Background and Hypotheses

2.1. *Auditor choice and firm-level corporate governance*

La Porta *et al.* (2000) and Shleifer and Vishny (1997) define corporate governance as a set of mechanisms through which outside investors protect themselves against expropriation by controlling owners. The corporate governance system in emerging markets is characterized by a high concentration of share ownership, family controlled business groups, and a relative absence of institutional investors (Claessens *et al.*, 2000; Faccio and Lang, 2001; Lins, 2003; Chen *et al.*, 2009). The fundamental agency conflict in these firms is between minority investors and controlling shareholders who frequently possess control rights in excess of their cash flow rights (Shleifer and Vishny, 1997; Claessens *et al.*, 2000; Faccio and Lang, 2001; Lins, 2003). This provides controlling shareholders with the incentive and the ability to derive private benefits of control at the expense of minority shareholders. The desire to avoid external monitoring and loss of reputation induces insiders to mask their private control benefits by managing reported accounting numbers (Leuz *et al.*, 2003; Haw *et al.*, 2004). Fan and Wong (2005) show that reputable auditors can serve as an important governance mechanism in mitigating the agency problems embedded in the ownership structure in emerging markets. Chan *et al.* (2007) also show that, in the Chinese market where the level of investor protection is weak, the demand for high-quality auditors increases when government ownership of shares (their proxy of agency costs) decreases.

The literature suggests that audit firms have incentives to prevent aberrant managerial (representing controlling owner) behavior such as exploitation of minority shareholders. This is because a decline in the traded value of a corporate client emanating from poor quality information would reflect on the auditor's public image and adversely affect the future value of the

"quasi-rents" from their client-base. Therefore, engagement of high-quality audit firms can be a credible means of mitigating agency problem between outside minority investors and controlling owners (Fan and Wong, 2005). Further, by hiring high-quality auditor, better governed firms enhance firm value by reducing the cost of monitoring managers and the cost of information acquisition by outsiders.

In a related stream of literature, DeFond *et al.* (2005) investigate whether firms' corporate governance environment influences the market's reaction to appointing a financial expert to the audit committee. The results are consistent with financial expertise complementing strong governance, perhaps because a strong governance environment helps channel expertise toward enhancing shareholder value. Similarly, Klein (2002) and Beasley and Salterio (2001) provide empirical support for the arguments that boards with stronger governance attributes are more likely to value the services of high-quality audit committee because such boards have greater incentives to improve financial reporting quality. This study extends the argument to the choice of external auditor in strong governance environment, and proposes the following hypothesis:

H1: High-quality firm-level corporate governance is positively associated with auditor choice in emerging markets, ceteris paribus.

2.2. *Auditor choice, firm-level governance, and legal environment*

La Porta *et al.* (1997, 1998) document that the level of investor protection is an important factor in explaining variations in corporate governance across countries. Durnev and Kim (2005) and Klapper and Love (2004) postulate that firms within the same country may offer varying degrees of protection to their investors. For example, firms could improve investor protection rights by increasing disclosure, selecting well-functioning and independent boards, and imposing disciplinary mechanisms to prevent controlling shareholders from engaging in expropriation of minority shareholders. Results in Mitton (2002) suggest that firms need not be held hostage by the legal regimes of their home country since minority shareholders can be offered protection beyond their legal rights by various means including higher disclosure quality and improved transparency through the engagement of a Big 5 auditor.

Prior research (e.g., Fan and Wong, 2005; Klapper and Love, 2004) indicates a potential interaction effect between country-level investor protection of minority shareholders and firm-level corporate governance in auditor choice. Two possibilities exist in terms of how legal environment relates to

auditor choice. It could increase the average audit quality in a country and thus reduces the benefits of incremental assurances provided by high quality auditors. This would be a substitutive relationship. On the other hand, the strong legal system also creates competitive capital markets where the choice of auditor is crucial for signaling firm value, in which case a complementary relationship will exist.

At the country level, results in Francis *et al.* (2003) indicate that higher quality accounting standard and higher quality auditing are more likely to exist in countries with strong investor protection, and that there is no demand for higher quality auditing unless there is also strong investor protection. However, it is not necessarily apparent whether incentives exist for firms in low investor protection or weak legal environment to hire high-quality auditors to enhance the overall governance of the firms.

On the one hand, auditor choice may matter less in countries with weak legal infrastructure since firms in these countries may be constrained by country-level legal provisions, hence, the payoff from improving governance from the engagement of high-quality auditors may be limited. Fan and Wong (2005) provide various reasons. First, the institutional environment supports an opaque business environment which limits the effectiveness of the audit function. Second, external audit loses its value when auditor's adverse opinion does not result in significant consequence in these countries where legal systems are weak. In a very weak legal environment, auditor choice can even become irrelevant because the weak public enforcement fails to punish violations identified by auditors. Third, the lack of audit expertise in these countries weakens the independent auditors' monitoring role. One important benefit of listing the shares is the possibility of raising funds in stock markets. However, in countries with weak legal systems, firms that improve governance through hiring of high-quality auditors may not necessarily improve the firms' access to external financing, because of relatively less developed financial markets (Doidge *et al.*, 2005).

In contrast, in countries with strong investor protection, the improvement in governance through auditor choice is likely to facilitate contracting with external parties, and improve the access to external financing due to the more developed capital markets. Francis and Wang (2008) conjecture that Big 5 auditors are more sensitive to the cost of client misreporting and its effect on auditor reputation, and are more likely to enforce higher earnings quality as investor protection regimes become stronger. In contrast, non-Big 5 auditors are less affected because they have less reputation capital at risk and are less likely to risk client dismissal by enforcing a

higher level of earnings quality. For a large sample of firms from 42 countries over 1994–2004, they show that earnings quality is higher as the country's investor protection regime becomes stronger, but only for firms with Big 5 auditors. The study concludes that the role of investor protection on earnings quality around the world is mediated by the incentives of Big 5 auditors to enforce higher earnings quality as investor protection regimes become stricter. The above arguments suggest a complementary relation between legal environment and auditor choice.

On the other hand, firms in countries with weak investor protection may want to adopt better firm-level governance to counterbalance the weaknesses in their country's laws and enforcement, and signal their intentions to offer greater investor rights. The reduced quality of accounting information in countries with weak legal systems may be mitigated by the higher audit effectiveness provided by high-quality auditors. By employing a high-quality auditor, the controlling owners of well-governed firms in weak legal environment may provide monitoring that limit their ability to expropriate the interests of minority shareholders and hence improve the market value of the firm (Durnev and Kim, 2005; Klapper and Love, 2004). Choi and Wong (2007) find that Big 5 auditors fulfill a strong governance function in weak legal environments. Kwon *et al.* (2007) show that the earnings quality of firms is strengthened when these firms are audited by industry specialists, and the improvement is stronger in a weak legal environment, suggesting that the benefits from engaging the services of industry specialist auditors increase as the country's legal environment shifts from a strong to a weak environment. Their results are consistent with a substitutive relation between legal environment and auditor choice.

Because of the two competing views, we state the following non-directional hypotheses in the null form, as follows:

H2: The strength of the positive association between firm-level corporate governance and auditor choice does not depend on the country-level legal environment.

3. Research Design

3.1. *Variables measurement*

3.1.1. *Firm-level corporate governance*

We measure the quality of corporate governance using the governance ratings provided by Credit Lyonnais Securities Asia (CLSA, 2001). The CLSA

ratings have been used extensively in prior studies (e.g., Chen *et al.*, 2009; Durnev and Kim, 2005; Klapper and Love, 2004). They cover the corporate governance practices of 495 firms from 25 emerging and newly emerged markets. The sample is selected based on two criteria, namely, firm size and investor interest. The CLSA corporate governance questionnaire consists of 57 questions divided into seven major categories: (1) transparency ($TRAN$), (2) management discipline ($DISP$), (3) independence ($INDP$), (4) accountability ($ACCT$), (5) responsibility ($RESP$), (6) fairness ($FAIR$), and (7) social awareness ($SOCL$). To avoid subjectivity, all questions are binary (yes/no) questions. The questionnaire was completed by CLSA analysts in each country for the companies that they cover, based on firm publications and interviews with senior management. The information was collected in late 2000.

In this study, we exclude transparency ($TRAN$) and social awareness ($SOCL$) in our measure of corporate governance. We do not consider $TRAN$ as it may be an outcome of auditor chosen. We also exclude $SOCL$ as it is not directly related to the quality of corporate governance. Given that this study seeks to examine the effect of governance on firm's choice of auditor, we checked the CLSA questionnaire and verified that auditor choice is not a rating item in CLSA. The Appendix provides further details of the issues captured by each corporate governance category.

Based on the remaining five categories, we construct two governance indices. First, following Klapper and Love (2004), we compute a composite score (GOV) which is the average score of the five categories reported in CLSA (2001). Second, similar to Bushman *et al.* (2004), we employ factor (principal component) analysis to extract the commonalities among the five attributes of corporate governance scores. Using a criterion of retaining factors with eigenvalues greater than one, the analysis produces a factor ($GOV1$) which explains about 40% of the variability in the governance scores. The details of the factor analysis are discussed in the results section.

3.1.2. *Legal environment*

Following Durnev and Kim (2005), we use three measures to capture the strength of legal environment in each country. Our first measure, the *de jure* measure of investor protection, is the anti-director rights index ($INVESTOR$) defined in La Porta *et al.* (1998) and extended by Pistor *et al.* (2000). The anti-director rights index indicates how easy it is for

shareholders to exercise their voting rights.[3] This index ranges from zero to five, with higher scores indicating greater protection of shareholders. We cannot rely solely on this measure because India and Pakistan score the highest in our sample (five), but do not have the best *de facto* investor protection. To measure the strength of *de facto* regulation, following Durnev and Kim (2005), we use the 1999–2000 monthly average of the rule of law index, the assessment of the law and order tradition from the International Country Risk Guide. We denote this variable as *ENFORCE*. To construct a measure that reflects both aspects of regulation, following Durnev and Kim (2005), we multiply *INVESTOR* by *ENFORCE* and define it as *LEGAL*.

3.1.3. *Auditor quality*

It is common in the literature to use a dummy variable for Big 5/non-Big 5 membership to proxy for auditor quality for markets around the world (Becker *et al.*, 1998; Francis *et al.*, 2003; Fan and Wong, 2005; Choi and Wong, 2007).[4] Big 5 auditors are concerned about preserving their reputation for being independent and for providing good quality audits (Watts and Zimmerman, 1983) and will seek to avoid reputation damage through litigation exposure (Palmrose, 1988; Shu, 2000). Previous studies (e.g., Choi and Wong, 2007) suggest that some non-Big 5 auditors such as BDO Seidman and Grant Thornton also provide high audit quality. In our sample, there is only one Malaysian firm that hires the services from BDO Seidman. Our results are the same whether we include or exclude that particular firm audited by BDO Seidman.

3.2. *Empirical model*

To test our first hypothesis (H1), we run the following logistic regression model:

$$CHOICE = \beta_0 + \beta_1 CG + \beta_2 FSIZE + \beta_3 BRISK + \beta_4 ROA + \beta_5 LEV + \beta_6 SG + \beta_7 EXTFIN + \beta_8 CROSS + e. \quad (1)$$

[3]The index aggregates the following components of shareholder rights: (1) the ability to vote by mail; (2) the ability to gain control of shares during the shareholders' meeting; (3) the possibility of cumulative voting for directors; (4) the ease of calling an extraordinary shareholders meeting; and (5) the availability of a mechanism allowing minority shareholders to make legal claims against the directors.

[4]Firth (1985), Simon *et al.* (1986), Chung and Lindsay (1988), Simon *et al.* (1992), Craswell *et al.* (1995) and DeFond *et al.* (2000) document the existence of a Big 5 brand-name fee premium in New Zealand, India, Canada, Singapore, Australia, and Hong Kong, providing support that Big 5 auditors are quality differentiated from non-Big 5 in these countries.

The variables are defined as follows:

$CHOICE$ = an indicator variable that equals one if the firm is audited by Big 5 and zero otherwise;
CG = GOV and $GOV1$;
GOV = the average score for *DISP, INDP, ACCT, RESP* and *FAIR* as reported in CLSA (2001);
$GOV1$ = factor score derived from the principal component analysis of *DISP, INDP, ACCT, RESP* and *FAIR* as reported in CLSA (2001);
$FSIZE$ = log of total assets measured in US thousand dollars;
$BRISK$ = the sum of inventories and receivables divided by total assets;
ROA = income before extraordinary items divided by the average assets;
LEV = total debt to capital ratio;
SG = sales growth over the previous year;
$EXTFIN$ = log of the total proceeds (in US million dollars) raised by issuing equity during the three-year period after 1999;
$CROSS$ = an indicator variable that equals one if the firm is also listed in the US market.

Equation (1) includes various control variables that have been shown to be associated with auditor choice in prior studies. Following Fan and Wong (2005), we include leverage (LEV) and return on assets (ROA) to control for client risks. Firm size (*FSIZE)* and ratio of inventories and receivables to total assets (*BRISK)* are included to control for scale and complexity of the audit (Choi and Wong, 2007). We include *CROSS* in the model to control for firms that cross-list in the US market since firms' auditor choice may be related to their overseas equity issues (Fan and Wong, 2005). Finally, we control for growth opportunities and need for external financing because Durnev and Kim (2005) show that these variables are associated with quality of governance. Growth opportunities is proxied by sales growth over the previous year (SG) and external financing need ($EXTFIN$) is measured by the log of the total proceeds raised by issuing equity for the three-year period after 1999.[5]

[5]We collect information on the equity offerings from the *Securities Data Companies* (SDC) database. As a robustness check, we also scale the proceeds from share offerings by total assets and obtained similar results.

To test our second hypothesis (H2), we augment Equation (1) with proxies for legal environment and the interaction between legal environment and quality of corporate governance, as follows[6]:

$$\begin{aligned} CHOICE = {} & \beta_0 + \beta_1 CG + \beta_2 FSIZE + \beta_3 BRISK + \beta_4 ROA + \beta_5 LEV \\ & + \beta_6 SG + \beta_7 EXTFIN + \beta_8 CROSS + \beta_9 LEGN \\ & + \beta_{10} CG * LEGN + e \end{aligned} \tag{2}$$

where:

$LEGN$ = level of legal environment proxied by $INVESTOR$, $ENFORCE$, and $LEGAL$;
$INVESTOR$ = anti-director rights index as used in Durnev and Kim (2005);
$ENFORCE$ = 1999–2000 monthly average of the rule of law index, the assessment of the law and order tradition from the International Country Risk Guide (Durnev and Kim, 2005);
$LEGAL$ = product of $INVESTOR$ and $ENFORCE$.

All other variables are as previously defined.

We include the interaction term in the regression model (CG*$LEGN$) to test the association of corporate governance on auditor choice for countries with different levels of legal environment. The coefficient for CG (β_1) represents the association of governance structures on auditor choice for firms in countries with extremely weak legal environment, where the score for the legal environment is zero. The sum of the coefficients for CG and (CG*$LEGN$), i.e., ($\beta_1 + \beta_{10}$) represents the association of corporate governance on auditor choice as the country's legal environment improves. Hence, the coefficient β_{10} shows the incremental effect of CG on $CHOICE$ when moving from weak to strong legal regimes. A positive (negative) β_{10} shows that the effect of CG on $CHOICE$ is larger (smaller) the stronger the legal environment.

[6]The regression may introduce possible multicollinearity problems since we include CG, $LEGN$, and CG*$LEGN$ in the same regression model. Following the suggestion by Neter *et al.* (1989) and Aiken and West (1991), we mean-center the CG variable to reduce problems associated with multicollinearity.

4. Results

4.1. *Sample and descriptive statistics*

Our sample selection begins with the CLSA corporate governance survey published in 2001. The survey covers 495 firms in 2001 in 25 emerging and newly emerged markets. We then cross-match the sample with Global Vantage database, of which we are able to find 394 firms recorded in Global Vantage. We remove 85 financial firms because these firms are often subject to regulations and laws that other firms are not. Following Klapper and Love (2004), we further remove seven firms in countries with less than three firms each (Argentina, Columbia, Czechoslovakia, Hungary, Russia, and Venezuela). Finally, we remove 20 firms without auditor and financial information available for running the logistic regression. The final sample consists of 282 firms in 16 countries, and the financial information is for financial year ending on or before May 2000.[7] The number of firms for each economy is provided in Table 1. Table 1 also provides the corporate governance scores reported in CLSA (2001). *GOV* is the mean scores for *DISP*, *INDP*, *ACCT*, *RESP*, and *FAIR*. Singapore has the highest mean corporate governance score of 68.5 while Pakistan has the lowest mean corporate governance score of 32.2.

Table 2, Panel A, shows the Pearson correlation coefficients between the various CLSA corporate governance attributes. Most of the correlations among these attributes are positive and statistically significant at $p < 0.01$. We perform a factor analysis to identify commonalties, or factors, underlying our measures of corporate governance. Using a criterion of retaining factors with eigenvalues greater than one, the analysis reveals one factor ($GOV1$), which explains 40% of the total variance. The Bartlett test of sphericity (160.94, $p < 0.01$) and Kaiser's measure of sample adequacy (0.70) indicate that the factor analysis is within acceptable levels (Tabachnik and Fidell, 1989). The factor ($GOV1$) loads heavily on *RESP* and *INDEP*.

In Table 3, we report the legal variables (*INVESTOR*, *ENFORCE*, and *LEGAL*). For all three proxies, a higher score indicates more stringent legal regimes. *INVESTOR* is highest (with a score of five) in Chile, Hong Kong,

[7]Our sample distribution is similar to those in prior studies. For example, the sample in Durnev and Kim (2004) includes 79 firms in India (16% of their overall sample); 8 firms in Mexico (1.6% of sample); 47 firms in Taiwan (9.5% of sample) and 38 firms in Hong Kong (7.7% of sample). The composition of the sample is fairly similar between our study and that of Durnev and Kim (2004). The absolute sample size for some of our countries is smaller compared to Durnev and Kim (2004) because of the additional data requirement for auditor information.

Table 1. Corporate governance across countries.

		DISP			*INDP*			*ACCT*			*RESP*			*FAIR*			*GOV*		
Country	N	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD
Brazil	24	52.3	55.6	21.9	54.8	64.3	17.6	64.6	62.5	16.3	63.2	66.7	19.0	39.1	33.3	19.0	54.8	56.7	8.5
Chile	11	49.5	55.6	11.5	64.3	71.4	15.3	39.8	37.5	10.9	75.7	83.3	15.6	80.8	83.3	7.6	62.0	62.6	3.9
China	12	33.3	33.3	15.7	51.8	64.3	23.2	19.8	12.5	17.2	44.5	50.0	14.8	77.8	83.3	18.8	45.4	48.7	12.1
Hong Kong	11	48.5	44.4	26.0	47.4	64.3	32.6	45.5	50.0	27.0	59.1	66.7	22.8	61.6	72.2	25.5	52.4	46.2	17.7
India	56	57.7	55.6	18.4	48.3	39.3	27.6	52.2	50.0	20.4	39.9	33.3	15.5	77.7	83.3	19.7	55.2	53.9	11.6
Indonesia	15	37.8	33.3	18.2	23.3	14.3	17.8	20.0	25.0	7.9	34.4	33.3	19.4	54.4	66.7	31.9	34.0	32.0	13.9
Korea	12	37.9	33.3	8.8	26.2	28.6	11.5	59.4	62.5	17.8	36.1	33.3	9.6	33.3	33.3	16.2	38.6	37.6	5.2
Malaysia	33	43.9	44.4	21.5	66.4	78.6	27.4	33.0	37.5	18.7	51.5	50.0	17.9	69.9	77.8	25.9	52.9	55.7	16.8
Mexico	4	72.3	77.8	11.1	51.8	50.0	18.8	62.5	62.5	10.2	54.2	50.0	8.4	68.0	77.8	23.7	61.7	62.1	2.5
Pakistan	9	38.3	33.3	18.5	39.0	28.6	27.7	33.0	25.0	20.8	28.4	22.2	21.4	22.2	22.2	5.5	32.2	25.5	15.9
Philippines	11	43.4	33.3	17.6	56.5	64.3	25.2	31.8	25.0	11.7	43.9	50.0	17.1	49.5	38.9	29.1	45.0	48.5	13.9
Singapore	26	61.5	66.7	21.2	81.6	85.7	17.9	44.2	37.5	17.0	69.2	66.7	13.9	86.1	88.9	9.8	68.5	68.5	8.5
Thailand	12	36.1	33.3	10.7	54.2	60.8	30.1	67.7	62.5	22.3	52.8	58.4	21.1	74.1	88.9	26.3	57.0	58.5	17.2
Turkey	8	62.5	66.7	17.8	32.1	21.4	25.6	32.8	25.0	23.1	47.9	41.7	22.6	22.9	19.5	9.6	39.7	38.5	14.3
Taiwan	22	54.6	55.6	15.7	81.5	85.7	15.7	42.6	43.8	27.2	42.4	50.0	19.1	49.5	38.9	25.3	54.1	52.0	9.3
South Africa	16	52.8	55.6	13.2	65.2	71.4	23.7	64.1	68.8	18.8	67.7	66.7	20.6	76.4	80.6	19.5	65.2	67.0	9.8

Note: We measure the quality of corporate governance from the report issued by Credit Lyonnais Securities Asia (CLSA 2001). The rating criteria used in CLSA (2001) are summarized into five major categories: (1) management discipline (*DISP*), (2) independence (*INDP*), (3) accountability (*ACCT*), (4) responsibility (*RESP*), and (5) fairness (*FAIR*). "*DISP*" refers to management's commitment to emphasize shareholder value and financial discipline. *INDP* refers to the board of directors' independence of controlling shareholders and senior management. *ACCT* refers to the accountability of management to the board of directors. *RESP* refers to the effectiveness of the board to take necessary measures in case of mismanagement. *FAIR* refers to the treatment minority shareholders receive from majority shareholders and management. Each category includes from six to 10 criteria, with a total of 57 criteria. Each of them is stated in the form of a questionnaire; CLSA asks its analysts covering a company to give a zero/one answer to each question. The answers to the questions in each category are summed to form a score and then scaled by the total number of questions in the corresponding category to convert it into a percentage. *GOV* is the composite score: the average of the above five items (Klapper and Love, 2004).

Table 2. Pearson Correlation and Factor loading for the corporate governance measures.

Panel A: Pearson Correlation Matrix for the governance scores

	DISP	*INDP*	*ACCT*	*RESP*	*FAIR*
DISP	1.00				
INDP	0.25**	1.00			
ACCT	0.22**	0.13*	1.00		
RESP	0.32**	0.41**	0.23**	1.00	
FAIR	0.16**	0.34**	0.03	0.33**	1.00

Panel B: Varimax Rotated Factor Loading for the governance scores

	*GOV*1
DISP	0.608
INDP	**0.719**
ACCT	0.419
RESP	**0.774**
FAIR	0.597
% Variance explained	40.34
Bartlett's test of sphericity = 160.94; $p < 0.01$ and KSA = 0.70	

Note: For definition of governance variables, refer to footnotes of Table 1. *, ** denote significance at 5% and 1% levels (two-tailed), respectively.

India, Pakistan, and South Africa, while it is lowest in China and Mexico (with a score of one). For the *ENFORCE* variable, Singapore has the highest score (10) while developing economies such as Brazil, Indonesia, and Mexico have the lowest score (3.33). We note that India and Pakistan score very high in *INVESTOR*, but the respective scores for *ENFORCE* are not as high. This suggests that the two variables *INVESTOR* and *ENFORCE* capture different aspects of regulation (i.e., *de jure* and *de facto* regulation). For the *LEGAL* variable which reflects both the *de jure* and *de facto* aspects of regulation, Hong Kong, Chile, and Singapore have relatively high scores while Brazil, China, Indonesia, and Mexico have very low scores.

In Table 4, we provide the mean values of the control variables used in the logistic regression. In 11 countries, majority of the firms are audited by Big 5 auditors.[8] On average, 64% of firms from all countries employed Big 5

[8]The average percent of firms audited by Big 5 is generally high. This is not a surprise as the main criterion for including firms in the CLSA survey is firm size and investor interest. These firms tend to be large and followed closely by investors.

Table 3. Legal environment by countries.

Country	*INVESTOR*	*ENFORCE*	*LEGAL*
Brazil	3	3.33	9.99
Chile	5	8.33	41.65
China	1	8.13	8.13
Hong Kong	5	8.33	41.65
India	5	6.67	33.35
Indonesia	2	3.33	6.66
Korea	2	6.67	13.34
Malaysia	4	5.28	21.12
Mexico	1	3.33	3.33
Pakistan	5	5	25
Philippines	3	5.9	17.7
Singapore	4	10	40
South Africa	5	3.54	17.7
Taiwan	3	6.67	20.01
Thailand	2	8.33	16.66
Turkey	2	6.04	12.08

Note: *INVESTOR* is the anti-director rights index indicates how easy it is for shareholders to exercise their voting rights. This index ranges from zero to five, with higher scores indicating greater protection of shareholders. *ENFORCE* is the 1999–2000 monthly average of the rule of law index, the assessment of the law and order tradition from the International Country Risk Guide. *LEGAL* is the product of *INVESTOR* and *ENFORCE*.

auditors. In Chile, Hong Kong, South Korea, Mexico, and Singapore, all firms demand audit services from the Big 5 auditors. In contrast, in India, Pakistan, and Philippines, the majority of the firms demand services of local audit firms rather than Big 5 auditors. This is consistent with Francis *et al.* (2003) who report that Big 5 auditors have a larger market share in countries with strong investor protection.

We report the correlation between the variables used in the regression model in Table 5. *GOV* and *GOV*1 are positively and significantly associated with demand for Big 5 auditors, consistent with our prediction in H1. We also find that Big 5 auditors are in greater demand in countries with stronger legal environment as proxied by *INVESTOR* and *LEGAL*, providing support for our H2.

4.2. *Multivariate analyses*

We report the results for the logistic regression model (1) in Table 6. Consistent with our prediction in H1, the coefficient estimates for the two

Table 4. Descriptive statistics for sample firms across countries.

CTRY	N	FSIZE	INVREC	ROA	LEV	SG	EXTFIN	BIG5	CROSS
Brazil	24	4,338.49	0.14	0.74	0.15	−0.13	4.91	0.96	0.71
Chile	11	3,931.81	0.23	3.55	0.21	0.07	89.96	1.00	0.55
China	12	2,115.95	0.11	5.42	0.17	0.17	39.28	0.75	0.42
Hong Kong	11	8,874.52	0.06	10.08	0.18	0.15	44.23	1.00	0.36
India	56	1,215.22	0.34	11.67	0.14	0.25	3.08	0.11	0.13
Indonesia	15	1,428.86	0.24	12.15	0.20	0.61	46.67	0.60	0.13
Korea	12	7,768.46	0.17	2.02	0.19	0.23	91.33	1.00	0.25
Malaysia	33	1,637.19	0.21	10.06	0.13	−0.01	1.21	0.70	0.00
Mexico	4	6,428.08	0.11	7.90	0.22	0.20	0.00	1.00	0.75
Pakistan	9	668.06	0.29	8.70	0.20	−0.14	0.00	0.00	0.00
Philippines	11	1,561.23	0.18	3.94	0.28	0.25	7.31	0.27	0.09
Singapore	26	2,524.52	0.24	6.11	0.09	0.11	42.10	1.00	0.04
Thailand	12	626.17	0.19	3.69	0.24	0.36	18.78	0.50	0.00
Turkey	8	1,974.68	0.32	16.74	0.11	0.74	0.00	0.75	0.13
Taiwan	22	2,258.68	0.26	10.07	0.13	0.46	60.98	0.91	0.23
South Africa	16	1,917.61	0.26	31.21	0.09	0.25	31.18	0.75	0.38

Note: The table reports the mean values of each variable. The definitions of the variables are as follows:

FSIZE = Total assets, in US thousand dollars;
INVREC = The sum of inventories and receivables divided by total assets;
ROA = Income before extraordinary items divided by the average assets (expressed as percentage);
LEV = Total debt to capital ratio;
SG = Sales growth over the previous year;
EXTFIN = Total proceeds raised by issuing equity during the three-year period after 1999;
BIG5 = An indicator variable that equals one if the firm is audited by Big 5 and zero otherwise;
CROSS = An indicator variable that equals one if the firm is also listed in the US market.

corporate governance variables (GOV and $GOV1$) are positive and statistically significant at conventional level. We also compute the marginal effect (in percent) in order to assess the economic significance of the governance variable on auditor choice.[9] The marginal effect associated with GOV ($GOV1$) indicates that, every standard deviation change in that variable

[9]The marginal effect indicates the change in the probability of a firm demanding Big 5 auditors per standard deviation change in each respective independent variable (holding other independent variables constant), given a base-rate probability of 64% of firms employing big 5 auditors. The marginal effect per standard deviation (SD) change for a variable is computed as $p \times (1-p) \times \beta \times SD$, where p is the base rate (64%) and β is the estimated coefficient from the logistic regression (Liao, 1994).

Table 5. Pearson Correlation of the variables used in the Logistic Regression.

	CHOICE	GOV	*GOV*1	INVESTOR	ENFORCE	LEGAL	LAT	BRISK	ROA	LEV	SG	CROSS	EXTFIN
CHOICE	1.00												
GOV	0.13*	1.00											
GOV1	0.15*	0.81**	1.00										
INVESTOR	0.29**	0.27**	0.22**	1.00									
ENFORCE	0.07	0.24**	0.32**	0.11	1.00								
LEGAL	0.13*	0.33**	0.35**	0.78**	0.68**	1.00							
LAT	0.32**	−0.04	−0.12*	−0.16**	−0.03	−0.11	1.00						
BRISK	−0.25**	0.07	0.06	0.22**	0.01	0.16**	−0.41**	1.00					
ROA	−0.02	0.07	0.08	0.14*	−0.11	0.01	−0.12	0.18**	1.00				
LEV	−0.06	−0.25**	−0.28**	−0.17**	−0.18**	−0.21**	0.18**	−0.13*	−0.20**	1.00			
SG	0.04	−0.08	−0.12*	−0.08	0.01	−0.05	0.02	−0.07	−0.05	−0.05	1.00		
CROSS	0.18**	0.11	0.02	−0.10	−0.19**	−0.17**	0.23**	−0.23**	−0.07	0.02	0.11	1.00	
EXTFIN	0.16**	0.00	0.02	−0.12*	0.08	−0.05	0.12*	−0.12*	−0.05	−0.05	0.22**	0.23**	1.00

Note: *, ** denote significance at 5% and 1% levels (two-tailed), respectively.
The definitions of the variables are as follows:

CHOICE = an indicator variable that equals one if the firm is audited by Big 5 and zero otherwise;
GOV = the composite score for the corporate governance reported in CLSA (2001);
GOV1 = first factor score derived from the principal component analysis;
LEGN = legal environment proxied by *INVESTOR*, *ENFORCE*, and *LEGAL*;
INVESTOR = anti-director rights index indicates how easy it is for shareholders to exercise their voting rights. This index ranges from zero to five, with higher scores indicating greater protection of shareholders;
ENFORCE = 1999–2000 monthly average of the rule of law index, the assessment of the law and order tradition from the International Country Risk Guide.
LEGAL = product of *INVESTOR* and *ENFORCE*;
FSIZE = log of total assets measured in US thousand dollars;
BRISK = the sum of inventories and receivables divided by total assets;
ROA = income before extraordinary items divided by the average assets;
LEV = total debt to capital ratio;
SG = sales growth over the previous year;
EXTFIN = log of the total proceeds raised by issuing equity during the three-year period after 1999;
CROSS = an indicator variable that equals one if the firm is also listed in the US market.

Table 6. Corporate governance and auditor choice.

	Coef.	GOV	$GOV1$
Constant	β_0	-2.996	-2.217
		$(9.01)^{***}$	$(6.61)^{***}$
CG	β_1	0.019	0.406
		$(4.22)^{**}$	$(7.71)^{***}$
FSIZE	β_2	0.452	0.480
		$(15.55)^{***}$	$(17.22)^{***}$
BRISK	β_3	-1.899	-1.824
		$(4.85)^{**}$	$(4.39)^{**}$
ROA	β_4	0.002	0.001
		(0.04)	(0.04)
LEV	β_5	-0.006	-0.005
		(1.93)	(1.35)
SG	β_6	0.007	0.009
		(0.04)	(0.06)
EXTFIN	β_7	0.180	0.166
		$(2.61)^{*}$	(2.20)
CROSS	β_8	0.352	0.413
		(0.83)	(1.15)
Pseudo R^2 (%)		22.6	24.1
Likelihood Ratio		50.79^{***}	54.47^{***}

Note: Definitions of the variables are as defined in Table 5.

increases a firm's likelihood to employ Big 5 auditors by 6.7% (9.4%) respectively (i.e., the likelihood increases from 64% to 70.7% for GOV, and from 64% to 73.4% for $GOV1$). The results render support for the contention that firms with strong corporate governance are more likely to engage the services of Big 5 auditors than firms with weak corporate governance. Consistent with prior studies (e.g., Fan and Wong, 2005; Choi and Wong, 2007), we find that larger firms are more likely to demand services from Big 5 auditors. We also find that Big 5 auditors are associated with firms with lower business risk (measured by inventory and receivables). There is some evidence that firms that raise more funds in the equity markets are more likely to employ Big 5 auditors than those that raise less funds in the equity markets.

Table 7 reports the results for the logistic regression model with the legal variables. The first three models show the main effect of legal environment on auditor choice. The strength of the legal environment has the expected positive effect on auditor choice, consistent with the findings of

Table 7. Corporate governance, legal environment, and auditor choice.

					GOV			GOV1		
	Coef.	INVESTOR	ENFORCE	LEGAL	INVESTOR	ENFORCE	LEGAL	INVESTOR	ENFORCE	LEGAL
Constant	β_0	−0.003	−2.640	−1.398	−1.708	−2.096	−1.826	−2.145	−2.3471	−2.525
		(0.00)	(6.92)***	(2.39)	(3.73)**	(5.97)***	(4.48)**	(5.44)**	(7.93)***	(7.50)***
CG	β_1				0.033	0.020	0.023	0.430	0.352	0.372
					(8.38)***	(3.83)**	(4.62)**	(5.81)**	(5.13)**	(4.54)**
FSIZE	β_2	0.450	0.449	0.449	0.459	0.468	0.449	0.496	0.512	0.534
		(14.86)***	(15.35)***	(15.52)***	(14.93)***	(16.40)***	(15.06)***	(16.34)***	(18.77)***	(18.43)***
BRISK	β_3	−1.301	−1.749	−1.614	−1.474	−2.020	−1.807	−1.367	−1.875	−1.578
		(2.17)	(4.24)**	(3.61)*	(2.62)**	(5.31)**	(4.19)**	(2.13)	(4.50)**	(2.96)*
ROA	β_4	0.004	0.004	0.001	0.005	0.003	−0.001	0.005	0.003	0.001
		(0.29)	(0.20)	(0.01)	(0.34)	(0.13)	(0.00)	(0.37)	(0.12)	(0.03)
LEV	β_5	−0.011	−0.007	−0.009	−0.008	−0.007	−0.009	−0.008	−0.007	−0.010
		(5.44)**	(2.46)*	(4.46)**	(2.96)*	(3.03)*	(4.44)**	(3.43)*	(3.15)*	(5.74)**
SG	β_6	−0.001	0.005	0.004	0.002	0.007	0.004	0.002	0.013	0.004
		(0.00)	(0.02)	(0.02)	(0.01)	(0.04)	(0.02)	(0.00)	(0.06)	(0.01)
CROSS	β_7	0.512	0.587	0.418	0.301	0.520	0.297	0.301	0.430	0.129
		(1.66)	(2.27)	(1.17)	(0.54)	(1.67)	(0.54)	(0.54)	(1.14)	(0.10)
EXTFIN	β_8	0.152	0.164	0.171	0.157	0.175	0.174	0.140	0.165	0.164
		(1.75)	(2.19)	(2.33)	(1.78)	(2.43)*	(2.29)	(1.35)	(2.19)	(1.92)
LEGN	β_9	0.519	0.099	0.021	0.630	0.021	0.036	0.556	0.018	0.050
		(16.70)***	(2.77)*	(6.76)***	(19.98)***	(0.07)	(6.95)***	(17.01)***	(0.04)	(10.39)***
CG*	β_{10}				−0.001	0.011	0.002	0.301	0.252	0.072
LEGN					(0.02)	(4.49)**	(5.63)**	(4.56)**	(8.96)***	(18.75)***
N		282	282	270	282	282	282	282	282	282
Pseudo R^2 (%)		28.3	21.6	22.0	32.2	24.8	27.5	35.2	28.1	35.6
Likelihood Ratio		65.04***	48.26***	81.46***	75.34***	56.25***	63.01***	83.64***	64.66***	84.82***

Note: Definitions of the variables are as defined in Table 5.

Francis *et al.* (2003) that Big 5 auditors have a larger market share in countries with strong investor protection.

To test whether the association between corporate governance and auditor choice is dependent on the strength of legal environment in each country, we include proxies capturing legal protection and an interaction term between corporate governance (GOV and $GOV1$) and the legal proxies in the logistic regression model. The results are reported in the last six columns in Table 7. The coefficient β_{10} shows the incremental effect of CG on $CHOICE$ when moving from weak to strong legal regimes. As reported in Table 7, the coefficient estimate for CG is significant in all models. More importantly, the coefficient estimate for $CG{*}LEGN$ is positive and statistically significant in five of the six governance-legal environment combinations, implying that the positive relation between governance and auditor choice increases with the strength of the legal environment.[10] Generally, our results support the contention that the better-governed firms demand higher quality audit services when the strength of legal regimes is higher. The benefits arising from the employment of high-quality auditors are likely to be greater when legal environment is stronger because both auditors and firms are subject to more severe legal punishments for opportunistic behavior (Newman *et al.*, 2005). Our results are consistent with the findings of Francis *et al.* (2003) which show that there is no demand for higher quality auditing unless there is also strong legal protection for investors.

4.3. *Sensitivity analyses*

4.3.1. *Alternative proxies for legal environment*

To test the robustness of our results, we use two additional proxies for the legal environment. The first is the inverse of the opacity index ($ROPA$) constructed by Kurtzman *et al.* (2004). The opacity score is the average of five indices: corruption, efficacy of the legal system, deleterious economic policy, inadequate accounting and governance practices, and detrimental regulatory structure. Each index ranges from 0 to 100, with lower value indicating lower opacity. For ease of interpretation, we measure $ROPA$ by subtracting

[10]The marginal effect associated with CG indicates that, every standard deviation change in CG increases a firm's likelihood to employ Big 5 auditors by 7% to 11.5%. The marginal effect associated with $CG{*}LEGN$ indicates that, every standard deviation change in the interaction variable increases a firm's likelihood to employ Big 5 auditors by 7.8% to 18.5% (when the variable is statistically significant). Hence, the impact of considering this interaction is nontrivial.

the overall opacity index from 100. Hence, high value of *ROPA* indicates higher quality of investor protection. The second proxy for the legal environment is a law enforcement index (*LAWE*) which is the mean score of three legal enforcement variables reported in La Porta *et al.* (1998), and used in Leuz *et al.* (2003).[11] The law enforcement index ranges from zero to 10, with higher scores for greater law enforcement. The results of logistic regression model (2) using these alternative measures of legal environment are reported in Table 8. Again, we find that the interaction between these alternative legal variables and governance variables are positive and statistically significant.

4.3.2. *Endogeneity of auditor choice and corporate governance*

To address the concern that both governance quality and auditor choice are choice variables, we perform two-stage regressions to account for the endogeneity of corporate governance and auditor choice. In the first stage, we run the following regression:

$$CG = \alpha_0 + \alpha_1 SG + \alpha_2 EXTFIN + \alpha_3 FSIZE + \alpha_4 OWN + \alpha_5 CAPINT + \alpha_6 CROSS + \alpha_7 LEGN + \varepsilon \quad (3)$$

where *OWN* is the average ownership percentage of the three largest shareholders of the 10 largest domestic firms[12]; and *CAPINT* is fixed assets scaled by sales. Other variables are as previously defined.

The governance variable (*GOV* and *GOV*1) is instrumented by growth opportunities (*SG*), external financing (*EXTFIN*), firm size (*FSIZE*), ownership structure (*OWN*), capital intensity (*CAPINT*), firm's cross listing in the US (*CROSS*), and legal environment (*LEGN*).[13] The choice of these variables is motivated from Klapper and Love (2004) and Durnev and Kim (2005). Following Fan and Wong (2005), the first-stage regression is estimated using ordinary least squares. The results are reported in Table 9.

[11]The three variables are (1) the mean for 1980–1983 of a variable provided by Business International Corp., capturing the efficiency and integrity of the judicial system; (2) the mean for 1982–1995 of a rule of law variable obtained from International Country Risk; and (3) the mean for 1982–1995 of a corruption variable that assesses the corruption in government, obtained from International Country Risk. *LAWE* is not available for China.

[12]The firm-by-firm data for the ownership structure is not available to us, thus, we use *OWN* developed by La Porta *et al.* (1997) to proxy for the ownership pattern of firms in various countries.

[13]To conserve space, we only report the results using *LEGAL* to proxy for legal environment. The use of *INVESTOR* or *ENFORC*E does not change our results in any material way.

Table 8. Other proxies for legal environment.

	Coef.	ROPA		LAWE	
Constant	β_0	2.151	−9.288	−1.375	−5.573
		(0.33)	(38.38)***	(0.48)	(23.58)***
CG	β_1	0.240	1.920	0.085	1.236
		(10.03)***	(2.98)*	(5.05)**	(3.90)**
FSIZE	β_2	0.408	0.395	0.385	0.391
		(9.80)***	(9.51)***	(9.83)***	(9.88)***
BRISK	β_3	−1.305	−1.603	−1.568	−1.585
		(1.68)	(2.69)*	(2.72)*	(2.80)*
ROA	β_4	0.003	0.004	0.002	0.003
		(0.08)	(0.13)	(0.08)	(0.11)
LEV	β_5	−0.006	−0.004	−0.004	−0.004
		(2.42)	(0.81)	(1.21)	(0.87)
SG	β_6	0.010	0.012	0.069	0.060
		(0.02)	(0.02)	(0.05)	(0.04)
CROSS	β_7	0.909	0.750	0.770	0.744
		(4.29)**	(3.18)*	(3.27)*	(3.13)*
EXTFIN	β_8	0.136	0.194	0.114	0.127
		(1.25)	(2.58)*	(0.94)	(1.15)
LEGN	β_9	0.065	0.125	0.032	0.607
		(1.03)	(40.05)***	(0.01)	(25.99)***
GOV*	β_{10}	0.004		0.013	
LEGN		(9.53)***		(4.49)**	
GOV1*	β_{10}		0.033		4.197
LEGN			(3.17)*		(4.20)**
N		282	282	270	270
Pseudo R^2 (%)		46.7	44.1	37.6	37.2
Likelihood Ratio		117.32***	109.41***	86.60***	85.59***

Note: The legal environment (*LEGN*) is proxied by *ROPA* and *LAWE*. *ROPA* is the inverse of the opacity index constructed by Kurtzman *et al.* (2004). The opacity score is the average of five indices: corruption, efficacy of the legal system, deleterious economic policy, inadequate accounting and governance practices, and detrimental regulatory structure. Each index ranges from zero to 100, with lower value indicating lower opacity. For ease of interpretation, we measure *ROPA* by subtracting the overall opacity index from 100. Hence, high value of *ROPA* indicates higher quality of investor protection. *LAWE* is a law enforcement index (*LAWE*) which is the mean score of three legal enforcement variables reported in La Porta *et al.* (1998), and used in Leuz *et al.* (2003). The law enforcement index values range from zero to 10, with higher scores for greater law enforcement. Definitions of the other variables are as defined in Table 5.

Table 9. Endogeneity of corporate governance and auditor choice.

Panel A: First-Stage Regression			
		GOV	$GOV1$
Constant	α_0	33.994 $(5.61)^{***}$	-1.052 $(-2.68)^{***}$
SG	α_1	0.243 $(2.47)^{***}$	0.007 (1.17)
LPRO	α_2	0.301 (0.53)	0.039 (1.06)
OWN	α_3	14.145 $(2.13)^{**}$	1.140 $(2.65)^{***}$
CROSS	α_4	7.114 $(3.16)^{***}$	0.234 (1.60)
CAPINT	α_5	-2.237 $(-3.77)^{***}$	-0.096 $(-2.50)^{***}$
LAT	α_6	0.484 (0.75)	-0.041 (-0.97)
LEGAL	α_7	0.461 $(5.94)^{***}$	0.036 $(7.10)^{***}$
Adjusted R^2 (%)		16.69	19.29
F-statistic		8.70^{***}	10.18^{***}
N		270	270
Panel B: Second Stage Regression			
		$\hat{}GOV$	$\hat{}GOV1$
Constant	β_0	13.238 $(7.37)^{***}$	-1.018 (0.91)
CG	β_1	0.260 $(7.52)^{***}$	8.035 $(19.77)^{***}$
FSIZE	β_2	0.419 $(12.27)^{***}$	0.396 $(8.17)^{***}$
BRISK	β_3	-1.616 $(2.87)^{*}$	-1.491 (2.34)
ROA	β_4	0.001 (0.02)	0.003 (0.15)
LEV	β_5	-0.013 $(9.47)^{***}$	-0.016 $(14.75)^{***}$
SG	β_6	-0.004 (0.03)	-0.023 (0.87)
CROSS	β_7	0.248 (0.19)	0.157 (0.10)
EXTFIN	β_8	0.104 (0.83)	0.111 (0.84)

Table 9. (*Continued*)

Panel B: Second Stage Regression			
		$\hat{}GOV$	$\hat{}GOV1$
LEGAL	β_9	0.664	0.054
		$(15.63)^{***}$	(2.60)
GG*	β_{10}	0.011	0.305
LEGAL		$(14.14)^{***}$	$(30.54)^{***}$
IMR_AUD	β_{11}		
IMR_GOV	β_{12}		
N		270	270
Pseudo R^2 (%)		28.8	37.8
Likelihood Ratio		63.70^{***}	87.19^{***}

Note: To address the concern that both governance quality and auditor choice are choice variables, we perform two-stage regressions to account for the endogeneity of corporate governance and auditor choice. In the first stage, we run the following regression:

$$CG = \alpha_0 + \alpha_1 SG + \alpha_2 EXTFIN + \alpha_3 FSIZE + \alpha_4 OWN + \alpha_5 CAPINT + \alpha_6 CROSS + \alpha_7 LEGAL + \varepsilon$$

where OWN is the average ownership percentage of the three largest shareholders of the 10 largest domestic firms; $CAPINT$ is fixed assets scaled by sales.
The estimated model of the first-stage regression is used to generate predicted values for GOV and $GOV1$ ($\hat{}GOV$ and $\hat{}GOV1$), which are in turn used for the second-stage auditor choice logistic regression:

$$CHOICE = \beta_0 + \beta_1 CG + \beta_2 FSIZE + \beta_3 BRISK + \beta_4 ROA + \beta_5 LEV + \beta_6 SG + \beta_7 EXTFIN + \beta_8 CROSS + \beta_9 LEGAL + \beta_{10} CG{*}LEGAL + e$$

The variables are as defined in Table 5.

Panel A shows the results for the first stage regression. *SG, OWN*, *CROSS*, and *LEGAL* are positively and significantly associated with *GOV* while *CAPINT* is negatively and significantly associated with *GOV*. The result for $GOV1$ is weaker. We only find *OWN*, and *LEGAL* (*CAPINT*) to be positively (negatively) and significantly associated with $GOV1$.

The estimated model of the first-stage regression is used to generate predicted values for GOV($\hat{}GOV$) and $GOV1$ ($\hat{}GOV1$), which are in turn used for the second-stage auditor choice logistic regression (model 2). The results, as reported in Panel B of Table 9, indicate that the coefficient estimate for the interaction term $\hat{}GOV{*}LEGAL$ is positive and statistically significant

at 1% level for both proxies of governance, consistent with our findings in the main analysis. Overall, the results are robust after controlling for the potential endogeneity between auditor choice and corporate governance in the regression model.[14]

4.3.3. *Other institutional environment and auditor choice*

The demand for Big 5 may be affected by the institutional environment in a country. We consider three such factors: litigious climate, economic wealth, and stock market development. Because the correlations between these variables are high, we include each of these factors in Equation (2) separately. The risk of doing business in a particular country may be associated with auditor choice. To ensure that our results reported in Table 7 are not driven by the litigation risk in each country, we include an additional control variable (*LITIG*) in Equation (2). We use the litigation index (*LITIG*) reported in Wingate (1997) and used in Choi and Wong (2007) and Choi *et al.* (2008) as a proxy for litigation risk.[15] We also control for national wealth and stock market development in our regression analyses (Choi and Wong, 2007). Firms in more wealthy countries can afford to hire Big 5 relative to firms in less wealthy countries. The demand for Big 5 is expected to be greater for countries with more developed financial market since auditors can perform important information intermediary role in the capital market. National wealth is measured by the log of Gross Domestic Product (GDP) per capita (*LGDP*), and stock market development is measured by stock market capitalization divided by GDP (*SMDEV*) for the year 1999.[16]

[14]We note that our instruments used in model (3) also affect auditor choice. We acknowledge that we do not have good theoretical instruments that affect governance but not auditors (since auditors can be seen as part of the governance mechanism). However, consistent with previous studies, we also use the Heckman correction (Heckman, 1976) to correct for the self-selection bias. Specifically, we compute the inverse Mills ratio *(IMR)* from model (3) and re-estimate model (2) with *IMR* as an additional independent variable in the second stage. The results of the second-stage regression using Heckman procedure are similar to those reported in Table 7.

[15]*LITIG* is a direct proxy for legal liability of audit firms in each country and measures the level of litigiousness in a country. The rating is developed by an international insurance underwriter for one of the Big 5 audit firms. The variable ranges from one to 10 and represents the "risk of doing business as an auditor" in a particular country, with higher score indicating higher level of litigiousness. The litigation index is not available for China, and hence firms from China are removed for the analyses.

[16]Gross Domestic Product per capita (*GDP*) is collected from the World Bank's *World Development Indicators database*. Stock market development (*SMDEV*) is measured by stock market capitalization divided by GDP. The data for *SMDEV* is from Beck *et al.* (2001).

Table 10. Other institutional environment and auditor choice.

		GOV	$GOV1$	GOV	$GOV1$	GOV	$GOV1$
Constant	β_0	−3.124	−6.268	−7.900	−9.862	1.251	−1.562
		(2.21)	(13.35)***	(15.69)***	(35.06)***	(0.58)	(2.17)
CG	β_1	0.066	1.909	0.052	0.763	0.048	1.446
		(4.81)**	(12.56)***	(3.51)*	(3.26)*	(3.61)*	(12.12)***
FSIZE	β_2	0.356	0.426	0.230	0.270	0.338	0.394
		(7.35)***	(8.45)***	(2.30)	(2.97)*	(7.21)***	(8.13)***
BRISK	β_3	−0.494	−0.282	−1.117	−1.140	−1.053	−0.941
		(0.21)	(0.06)	(0.92)	(0.93)	(1.12)	(0.82)
ROA	β_4	−0.003	−0.002	0.003	0.004	−0.007	−0.006
		(0.11)	(0.04)	(0.08)	(0.13)	(1.01)	(0.56)
LEV	β_5	−0.010	−0.011	−0.008	−0.008	−0.009	−0.010
		(4.87)**	(6.68)***	(2.66)*	(2.41)	(4.21)**	(5.79)**
SG	β_6	0.007	0.006	−0.004	−0.002	0.005	0.003
		(0.04)	(0.03)	(0.01)	(0.01)	(0.02)	(0.01)
CROSS	β_7	0.289	−0.122	0.442	0.302	0.798	0.619
		(0.37)	(0.06)	(0.85)	(0.38)	(3.40)*	(1.95)
EXTFIN	β_8	0.075	0.091	0.124	0.138	0.098	0.115
		(0.38)	(0.52)	(0.90)	(1.09)	(0.70)	(0.89)
LEGAL	β_9	0.167	0.020	0.188	0.048	0.231	0.077
		(4.80)**	(0.65)	(7.05)***	(6.70)***	(12.67)***	(20.37)***
CG*	β_{10}	0.003	0.102	0.003	0.046	0.003	0.076
LEGAL		(5.77)**	(16.98)***	(4.67)**	(6.09)***	(7.17)***	(19.75)***
LITIG	β_{11}	1.452	1.323				
		(26.19)***	(20.23)***				
LGDP	β_{11}			1.426	1.309		
				(59.13)***	(55.29)***		
SMDEV	β_{11}					1.952	1.884
						(38.67)***	(35.99)***
N		270	270	282	282	282	282
Pseudo R^2 (%)		48.3	53.7	60.4	60.9	45.9	50.4
Likelihood Ratio		117.35***	134.31***	163.65***	165.37***	114.76***	129.22***

Note: The demand for Big 5 may be affected by the institutional environment in a country. We consider three such factors: litigious climate, economic wealth, and stock market development. We include each of these variables as an additional control variable in the regression model. We use the litigation index ($LITIG$) reported in Wingate (1997) and used in Choi and Wong (2007) as a proxy for litigation risk.

We also include national wealth measured by the log of GDP per capita ($LGDP$), stock market development ($SMDEV$) for the year 1999 in the regression model. Other variables are as defined in Table 5.

We report the results in Table 10. Consistent with our expectation, *LITIG*, *LGDP*, and *SMDEV* are all positively and significantly associated with auditor choice. More importantly, after controlling for these institutional factors, we continue to find a significant positive interaction between the governance and legal variables.

4.3.4. *Controlling for industry effect*

The extent of opportunistic behavior by firms may be limited in a regulated industry, thus lowering the demand for Big 5 auditors. Further, *BRISK* and *LEV* may vary significantly across industries due to specific institutional environments (Choi and Wong, 2007). We add a variable *REGIND* to Equation (2). *REGIND* equals one if the firm is in energy (12 firms) and utilities (28 firms), and zero otherwise. We adjust *BRISK* and *LEV* by subtracting the variables from the industry median of each corresponding country. The results in Table 7 are unaffected by the adjustments for industry effect.

4.3.5. *Correction for cross-sectional correlations in residuals*

The regression in model (2) employs multiple observations for each country. Such observations may not be fully independent within the same country, and thus regression residuals may be cross-sectionally correlated. We run logistic regressions with clustered robust errors to account for cross-sectional correlations (Petersen, 2009; Williams, 2000). Specifically, the Wald-statistics are based on clustered standard errors (clustered by country).[17] Our results are robust with the correction for cross-sectional correlation among the residuals.

4.3.6. *Affiliation of local firms with Big 5*

Big 5 audit firms sometimes set up joint ventures or affiliated firms in various countries. For example, in Korea and Thailand, foreign accounting firms are not allowed to practice without partnering with local firms (Choi and Wong, 2007). Big 5 and Big 5-affiliated firms may differ significantly in quality. Thus, in our robustness test, we drop all Big 5-affiliated auditors from the sample and repeat the analyses.[18] The sample is reduced to 270. The results remain unchanged after removing Big 5-affiliated auditors.

[17] We also run the regression clustered by country and industry. The results are similar.
[18] We thank Choi and Wong (2007) for providing the data.

4.3.7. *Alternative definition of audit quality*

Previous literature provides evidence that industry-specialized auditors provide higher audit quality than non-specialists.[19] We label the auditor that has the largest market share in the industry of the respective country as specialists.[20] We find that the demand for audit specialists by high governance firms (proxied by GOV and $GOV1$) is stronger the more stringent the legal environment, a result that is generally consistent with our main findings.

5. Conclusions

In this study, we examine the effect of firm-level governance on the firm's choice of an external auditor. Further, we test how the relation between corporate governance and auditor choice may be affected by the legal environment. The results reveal that firm's auditor choice is positively related to the firm-level governance scores. Furthermore, the positive association between auditor choice and the firm-level governance scores is stronger as the strength of the legal environment increases. These findings are robust after controlling for determinants that were found to be significant in earlier research. Overall, our findings show that in general situations when there is no specific incentive for strong corporate governance, the positive association between firm's governance and demand for quality external auditors may not be as strong in countries where legal institutions are weak compared to in countries where legal institutions are strong.

This study is subject to several limitations. First, the CLSA governance ranking is based on survey data from analysts. Thus, it may be driven by the bias of the analysts. However, the validity of the CLSA scores has been corroborated by other studies. For example, Khanna *et al.* (2006) construct a "scandal index," based on the media-reported incidences of expropriation,

[19]For example, industry-experienced auditors are better able to detect errors among clients within their industry specialization than outside their specialization (Owhoso *et al.*, 2002). Specialists are more likely to comply with auditing standards than non-specialists (O'Keefe *et al.*, 1994); and specialists are less likely to be associated with SEC enforcement actions (Carcello and Nagy, 2004). Collectively, these findings suggest that an auditor's industry specialization adds value to clients, and that audits provided by industry specialists have higher quality.

[20]Following prior studies (e.g., Krishnan, 2003; Dunn and Mayhew, 2004), we form industries based on two-digit SIC codes and sum revenues for each industry. Next, we calculate the proportion of each industry's revenues that is audited by each auditor. Our auditor specialization variable is coded one if the auditor has the largest market share in the industry, and zero otherwise.

tax evasion, and price fixing, for a group of Indian firms covered by CLSA. They find that companies with low CLSA scores are more likely to have scandals. Durnev and Kim (2005) compare the CLSA scores with the S&P's measure of corporate disclosure and confirm the consistency between the two rankings. Second, working with an international sample increases the probability of omitted correlated variable problem. Further, the theoretical relations among institutional factors and implications of international differences in corporate governance, ownership concentration, and business structures are still not well understood. Third, the selection criteria for the CLSA sample (firm size and investor interest) and the small sample size may limit the generalizability of the results. Finally, the endogeneity issue between governance and auditor choice is not fully addressed in this study due to a lack of theoretical instruments that affect governance but not auditor choice. In spite of these caveats, our work contributes to a growing literature on the interplay between country-level legal environment and firm-level characteristics on financial reporting and earnings quality.

Appendix: Summary of CLSA's CG Assessment

The CLSA CG score is based on how the analysts rate a company on 57 issues under seven main aspects of governance. The following is a summary of what constitutes good GC based on Discipline, Independence, Accountability, Responsibility, and Fairness.

Discipline (*DISP*)

- Explicit public statement placing priority on CG
- Management incentivized towards a higher share price
- Sticking to clearly defined core businesses
- Having an appropriate estimate of cost of equity
- Having an appropriate estimate of cost of capital
- Conservatism in issuance of equity or dilutive instruments
- Ensuring debt is manageable, used only for projects with adequate returns
- Returning excess cash to shareholders
- Discussion in Annual Report on CG

Independence (*INDP*)

- Board and senior management treatment of shareholders
- Chairman who is independent from management
- Executive management committee comprised differently from the board

- Audit committee chaired by independent director
  Remuneration committee chaired by independent director
- Nominating committee chaired by independent director
- External auditors unrelated to the company
- No representatives of banks for other large creditors on the board

Accountability (*ACCT*)

- Board plays a supervisory rather than executive role
- Non-executive directors demonstrably independent
- Independent, non-executive directors at least half of the board
- Foreign nationals presence on the board
- Full board meetings at least every quarter
- Board members able to exercise effective scrutiny
- Audit committee that nominates and reviews work of external auditors
- Audit committee that supervises internal audit and accounting procedures

Responsibility (*RESP*)

- Acting effectively against individuals who have transgressed
- Record on taking measures in cases of mismanagement
- Measures to protect minority interests
- Mechanisms to allow punishment of executive/management committee
- Share trading by board members fair and fully transparent
- Board small enough to be efficient and effective

Fairness (*FAIR*)

- Majority shareholders treatment of minority shareholders
- All equity holders having right to call general meetings
- Voting methods easily accessible (e.g., through proxy voting)
- Quality of information provided for general meetings
- Guiding market expectations for fundamentals
- Issuance of ADRs or placement of shares fair to all shareholders
- Controlling shareholder group owning less than 40% of company
- Portfolio investors owning at least 20% of voting shares
- Priority given to investor relations
- Total board remuneration rising no faster than net profits

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